Paper No. 32

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte JEROME H. LEMELSON
and ROBERT D. PEDERSEN

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Appeal No. 2000-1511
Application 08/671,853

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HEARD: AUGUST 13, 2002

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Before HAIRSTON, JERRY SMITH and GROSS, Administrative Patent Judges.

JERRY SMITH, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on the appeal under 35 U.S.C. § 134 from the examiner's rejection of claims 100-113, 115-122, 125-132, 134-136 and 139-161, which constitute all the claims remaining in the application. A first amendment after final rejection was filed on May 14, 1998 but was denied entry by the examiner. A second amendment after final rejection was filed on December 4, 1998 and was entered by the examiner.

The disclosed invention pertains to a method and apparatus for controlling the travel of a powered vehicle having manual steering and acceleration controls. More particularly, the invention monitors objects related to the path of the vehicle and controls the steering and acceleration of the vehicle based on the locations of monitored objects.

Representative claim 100 is reproduced as follows:

100. A method for controlling the travel of a powered vehicle having manual steering and acceleration controls and supporting a ranging apparatus comprising:

(a) as the powered vehicle travels a roadway, measuring the distance to and relative velocity with respect to the vehicle of a plurality of objects in the vicinity of the vehicle;

(b) calculating, with respect to each of the objects, whether the object and the powered vehicle are on a collision course;

(c) when the calculation reveals that a collision is imminent, (i) selecting one of a plurality of state vectors based on which of a plurality of directions from the vehicle there are detected objects on a collision course with respect to the vehicle and whether or not another object is detected in each other of the plurality of directions, (ii) using the selected state vector to select one of a plurality of sets of fuzzy logic inference rules, and (iii) using the selected set of rules to determine a combination of steering and acceleration that is coordinated to attempt to avoid a collision between the powered vehicle and the detected objects;

(d) wherein the fuzzy logic inference rules in each of the plurality of sets are each dependent on at least (i) the distance and relative velocity with respect to the vehicle of at least one of the detected objects on a collision course with respect to the powered vehicle and (ii) in which of the plurality

of directions relative to the powered vehicle other detected objects are located; and

(e) applying the determined combination of steering and acceleration to automatically control the steering and acceleration of the powered vehicle.

The examiner relies on the following references:

Kakinami et al. (Kakinami)	5,197,562	Mar. 30, 1993
Kohsaka	5,327,117	July 05, 1994
Butsuen et al. (Butsuen)	5,332,057	July 26, 1994
Ishikawa	5,545,960	Aug. 13, 1996
		(filed Apr. 06, 1992)

Claims 100-113, 115-122, 125-132, 134-136 and 139-161 stand rejected under 35 U.S.C. § 112, first paragraph, as being based on an inadequate disclosure. Claims 100-113, 115-122, 125-132, 134-136 and 139-161 also stand rejected under 35 U.S.C. § 103. As evidence of obviousness the examiner offers Butsuen in view of Ishikawa with respect to claims 100, 103-107, 113, 115-122, 125-129, 132, 134, 139-141, 143-149, 151-153, 155, 156 and 158, Butsuen in view of Ishikawa and Kakinami with respect to claims 101, 102, 108-112, 130, 131, 135, 136 and 157, and Butsuen in view of Kakinami and Kohsaka with respect to claims 142, 150, 154 and 159-161.

Rather than repeat the arguments of appellants or the examiner, we make reference to the briefs and the answers for the respective details thereof.

OPINION

We have carefully considered the subject matter on appeal, the rejections advanced by the examiner and the evidence of obviousness relied upon by the examiner as support for the obviousness rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellants' arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answers.

It is our view, after consideration of the record before us, that the claimed invention is properly supported by the specification of this application as filed within the meaning of 35 U.S.C. § 112. We are also of the view that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the obviousness of the invention as set forth in claims 100-113, 115-122, 125-128, 134 and 139-161. We reach the opposite conclusion with respect to claims 129-132, 135 and 136. Accordingly, we affirm-in-part.

We consider first the rejection of all claims under the first paragraph of 35 U.S.C. § 112. The rejection states that the specification fails to provide an enabling disclosure.

Specifically, the rejection states that it would require undue experimentation to enable a person skilled in the art to make and use the invention. The rejection also states that the disclosure is insufficient for teaching how to distinguish one object from another object or how to determine distance and relative velocity of each object. The examiner also states that the disclosure is non-enabling for the measurement of the width of the rear end of an automobile. The examiner observes that the object detection and recognition and the fuzzy logic rules require complex algorithms and extensive processing that are not sufficiently described in the disclosure [first action rejection, pages 4-6]. In the final rejection the examiner added that the complexity of putting all the features into one real-time system requires undue experimentation.

Appellants argue that the rejection does not properly consider the actual language of the claims. Appellants argue that the examiner has offered no evidence to support the position that the invention could not be implemented in real time. Specifically, appellants argue that the table lookup requirements of the claimed invention would not require any, much less undue, experimentation, and that the claimed invention basically uses known prior art systems of fuzzy logic and image analysis and

ranging [brief, pages 7-12].

The examiner essentially repeats the statements made in the rejections. Additionally, the examiner responds that the specification has not disclosed how the invention can be achieved in a coherent real time system. The examiner then appears to question whether the claimed invention is capable of operating in real time [answer, pages 5-8].

Appellants respond that many of the "claimed" features questioned in the examiner's rejections do not even appear in the broadest claims on appeal. Appellants also respond that the examiner has ignored previously submitted evidence that real-time image analysis systems were known at the time of the invention. Appellants observe that the evidence on this record clearly supports appellants' position that the invention is adequately described [reply brief].

The examiner responds that appellants' system may not be fast enough to provide a practical collision avoidance system. Basically, the examiner makes a variety of assumptions about the data, and the examiner concludes that a "real time" system is not practical [supplemental answer].

Appellants respond that the examiner's assumptions are incorrect and are not necessary to practice the claimed invention. Appellants reiterate their position that the evidence submitted by them, which is essentially unchallenged by the examiner, supports the fact that the claimed invention can be practiced in real time [supplemental reply brief].

As noted above, the examiner's rejection is based upon the enablement requirement of 35 U.S.C. § 112. The test for enablement is not whether any experimentation is necessary, but whether, if experimentation is necessary, it is undue. In re Angstadt, 537 F.2d 498, 504, 190 USPQ 214, 219 (CCPA 1976). The PTO has the burden of giving reasons, supported by the record as a whole, why the specification is not enabling. Showing that the disclosure entails undue experimentation is part of the PTO's initial burden. In re Angstadt, Id.

We are of the view that the examiner has not satisfied his burden of showing that undue experimentation would be required in making and using the claimed invention. First, we agree with appellants that the examiner has improperly questioned the disclosure with respect to elements which do not appear in the claimed invention. The examiner has clearly failed to make this rejection commensurate with the invention as currently

claimed. Second, the examiner's findings of undue experimentation are mere conclusions based on the examiner's own speculations. The examiner essentially finds that there would be undue experimentation because the claimed invention requires sophisticated and complex operations. The fact that an invention is sophisticated and complex does not, by itself, lead to the conclusion that undue experimentation would be required to make and use the invention. We agree with appellants that the preponderance of the evidence in this case supports the adequacy of the disclosure.

With respect to the real time issue, we essentially agree with all of appellants' arguments. We also note that there is no recitation of real time operation in the claims. The examiner's arbitrary definition of real time operation is irrelevant to the claimed invention. This particular issue appears to be more of a question of practical utility of the invention rather than whether it is properly disclosed. As argued by appellants, even if the invention operates in the real time frame established by the examiner, that does not mean that the invention is not practical or has no utility. Enablement only has to relate to the invention as claimed.

Therefore, we do not sustain the examiner's rejection of all the claims on appeal based on a lack of enablement of the specification.

We now consider the rejections of the claims under 35 U.S.C. § 103. In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984).

These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. See Id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976). Only those arguments actually made by appellants have been considered in this decision. Arguments which appellants could have made but chose not to make in the brief have not been considered and are deemed to be waived by appellants [see 37 CFR § 1.192(a)].

With respect to the rejection based on Butsuen and Ishikawa, the examiner basically finds that Butsuen teaches the claimed invention except for the use of fuzzy logic inference rules to determine the combination of steering and acceleration to attempt to avoid a collision. The examiner cites Ishikawa as teaching fuzzy logic inference rules to control the steering and acceleration of a vehicle. The examiner finds that it would have

been obvious to the artisan to control the system of Butsuen using fuzzy logic rules as taught by Ishikawa [first action rejection, pages 7-8].

Appellants argue that neither Butsuen nor Ishikawa teaches the selection of one of a plurality of state vectors as claimed to direct the system to select one of a plurality of sets of fuzzy inference rules. Specifically, appellants argue that the "COMMENT" section of Ishikawa does not teach the selection of a state vector as claimed [brief, pages 12-18].

The examiner responds that the phrase "state vectors" is essentially broad enough to read on any input of data, including the data input in Butsuen or Ishikawa. The examiner also responds that Ishikawa teaches the selection of a subset of the rules based on the detection of objects [answer, pages 8-11].

Appellants respond that the parameters of the state vectors of the claimed invention are specifically defined within the claims and are not met by any input data [reply brief].

With respect to independent claims 100 and 117, we agree with the arguments made by appellants in the briefs. These claims specifically recite the selection of one of a plurality of state vectors and specify what the parameters of the state vector are. Since the parameters of the state vector are recited in

these claims, the examiner's position that the claimed state vector is met by any input data is not correct. We agree with appellants that the applied prior art does not suggest the selection of a state vector as claimed and the using of that state vector to select one of a plurality of rule sets as claimed. Therefore, we do not sustain the examiner's rejection of independent claims 100 and 117 or of any of the claims which depend therefrom.

Remaining independent claim 129 does not recite a state vector. Appellants argue, however, that Ishikawa does not teach a subset of rules from which the values of the input variables will be selected. According to appellants, Ishikawa has only one set of rules, not several sets of rules as required by claim 129. We do not agree with this argument. The computer of Ishikawa stores a plurality of rules such as Rule 001 to Rule 155 shown in Figures 16A to 18. Ishikawa shows that these rules can be separated into a plurality of different subsets based on the location of the obstacles, such as Rules 003-011 for when obstacles exist to the right, left and ahead of the mobile machine. In response to the measured input values, Ishikawa allows certain of the Rules to fire. The Rules that fire constitute a selected set of the rules as recited in claim 129.

Note that the selected set of rules in claim 129 are not required to be the same as one of the sets of the plurality of sets previously recited in the claim. Therefore, we do not find appellant's only argument regarding the subsets of rules in Ishikawa to be persuasive. Accordingly, we sustain the examiner's rejection of claim 129.

With respect to separately argued dependent claim 139, appellants argue that the examiner has not addressed the limitation of an override controller as claimed. The examiner responds that he took official notice of this feature. Since the Federal Circuit has dictated that official notice which has been contested cannot take the place of evidence lacking in the record, we do not sustain the rejection of claim 139.

With respect to separately argued dependent claim 134, appellants argue that the applied prior art does not teach the added element of warning the human driver first, and then applying the automatic control only if there is no human response sufficient to prevent a collision. The examiner took official notice of alarms. We do not sustain the rejection of claim 134 for reasons discussed in the previous paragraph.

We do not need to consider the remaining dependent claims because appellants have not argued these claims and/or because the additionally applied prior art does not overcome the deficiencies noted above in the main combination of Butsuen and Ishikawa. These remaining claims, therefore, stand or fall with the claims from which they depend.

In summary, the rejection of all appealed claims under the first paragraph of 35 U.S.C. § 112 is not sustained. The rejection of all appealed claims under 35 U.S.C. § 103 is not sustained with respect to claims 100-113, 115-122, 125-128, 134 and 139-161, but is sustained with respect to claims 129-132, 135 and 136. Therefore, the decision of the examiner rejecting claims 100-113, 115-122, 125-132, 134-136 and 139-161 is affirmed-in-part.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

KENNETH W. HAIRSTON Administrative Patent Judge	)
JERRY SMITH Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
ANITA PELLMAN GROSS Administrative Patent Judge	)

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